

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (withdrawn) A method for antenna tracking, comprising:  
determining complex weightings for matching a polarization of an incident signal on a data channel; and  
applying the complex weightings to a tracking channel such that an antenna system polarization is matched to the polarization of the incident signal.
2. (withdrawn) The method for antenna tracking of claim 1, wherein the complex weightings are determined such that a signal power of the incident signal is maximized.
3. (withdrawn) A method for antenna tracking, comprising:  
deriving complex weighting values that match a polarization of an incident signal on a data channel; and  
applying the complex weighting values and time variations of the complex weighting values to a tracking channel to replicate the polarization of the incident signal over time.
4. (withdrawn) A system for antenna tracking, comprising:  
means for measuring a polarization of an incident signal on a data channel and for determining an amplitude and phase combination that matches the polarization; and  
means for applying the amplitude and phase combination to a tracking channel responding to variations in the polarization.
5. (withdrawn) The system for antenna tracking of claim 4, wherein the means for measuring a polarization of an incident signal on a data channel and for determining an amplitude and phase combination that matches the polarization includes  
a polarization-matching network.
6. (withdrawn) The system for antenna tracking of claim 5, wherein the polarization matching network includes a vector modulator.

7. (withdrawn) The system for antenna tracking of claim 5, wherein the polarization matching network includes a diversity combiner.

8. (withdrawn) The system for antenna tracking of claim 4, wherein the means for applying the amplitude and phase combination to a tracking channel responding to variations in the polarization includes  
a polarization-matching network.

9. (withdrawn) The system for antenna tracking of claim 8, wherein the polarization matching network includes a vector modulator.

10. (withdrawn) The system for antenna tracking of claim 8, wherein the polarization matching network includes a diversity combiner.

11. (currently amended) A method for antenna tracking, comprising:  
processing orthogonally polarized tracking channel components of an incident signal at a tracking channel to make a determination as to which of the orthogonally polarized tracking channel components is stronger;  
using the determination to select a polarization of a data channel, which is a different channel than the tracking channel, to reduce a polarization mismatch loss; and  
using the determination to track the direction of the incident signal to minimize antenna pointing loss.

12. (canceled)

13. (currently amended) A system for antenna tracking, comprising:  
means for detecting orthogonally polarized signals of a tracking channel, determining which of the orthogonally polarized signals is stronger, suppressing a cross polarization response of the tracking channel, and increasing the accuracy of tracking of incident signal direction to minimize antenna pointing loss; and  
a controller configured to select a polarization of a data channel depending upon which of the orthogonally polarized signals is stronger;  
wherein the tracking channel and the data channel are two different channels.

14. (withdrawn) The system for antenna tracking of claim 13, wherein the means for detecting orthogonally polarized signals of a tracking channel, determining which of the orthogonally polarized signals is stronger, and suppressing a cross polarization response of the tracking channel includes

means for combining the orthogonally polarized signals after the orthogonally polarized signals are detected.

15. (withdrawn) The system for antenna tracking of claim 13, wherein the means for detecting orthogonally polarized signals of a tracking channel, determining which of the orthogonally polarized signals is stronger, and suppressing a cross polarization response of the tracking channel includes

two tracking receivers configured for detecting the orthogonally polarized signals, respectively, and

means for matching tracking amplitude responses of the two tracking receivers.

16. (currently amended) ~~[[The]]~~ A system for antenna tracking ~~of claim 13,~~  
comprising:

means for detecting orthogonally polarized signals of a tracking channel, determining which of the orthogonally polarized signals is stronger, suppressing a cross polarization response of the tracking channel, and increasing the accuracy of tracking of incident signal direction to minimize antenna pointing loss; and

a controller configured to select a polarization of a data channel depending upon which of the orthogonally polarized signals is stronger;

wherein the means for detecting orthogonally polarized signals of a tracking channel, determining which of the orthogonally polarized signals is stronger, suppressing a cross polarization response of the tracking channel, and increasing the accuracy of tracking of incident signal direction to minimize antenna pointing loss includes

a tracking receiver configured to switch between tracking channel inputs for the orthogonally polarized signals and to generate sequential orthogonal polarization outputs, and

a sequential summer configured to receive the sequential orthogonal polarization outputs and to provide an antenna control unit (ACU) input signal; and

wherein the controller is configured to select the polarization of the data channel based on the higher signal level from the sequential orthogonal polarization outputs.